

ADDITIONAL NOTES ON THE GENUS CITHAREXYLUM. VII

Harold N. Moldenke

CITHAREXYLUM B. Juss.

Additional & amended bibliography: Dennis, Kew Bull. Addit. Ser. 3: 177 & 258. 1970; El-Gazzar & Wats., New Phytol. 69: 469, 471, 473, 483, & 485. 1970; Elliovson, Complete Gard. Book South. Hemisph., ed. 6, 12 & 70. 1970; Gibson, Fieldiana Bot. 24: 179, 184--191, & 222, fig. 35 (1970) and 32: 176--177. 1970; Hocking, Excerpt. Bot. A.15: 422. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1313 & 1337--1338. 1970; Reitz, Sellowia 22: 34. 1970; J. Rzedowski, Anal. Esc. Nac. Cienc. Biol. 18: 93. 1970; Soukup, Raymondiana 3: 26 & 47. 1970; G. Taylor, Ind. Kew. Suppl. 14: 34. 1970; Van Steenis-Kruseman, Fl. Males. Bull. 5, Ind. LI. 1970; Angely, Fl. Anal. & Fitogeogr. S. Paulo, ed. 1, 4: 826, 830, & iv. 1971; Anon., Biol. Abstr. 56 (6): B.A.S.I.C. S.46. 1971; Cain, Man. Veg. Anal., imp. 2, 226 & 242. 1971; Dwyer, Raymondiana 4: 70. 1971; Farnsworth, Pharmacog. Titles 6 (9): iii & title 15746. 1971; Fryxell, Biol. Abstr. 52: 3079. 1971; Gantz, Baturalist South. Fl. 169. 1971; Hocking, Excerpt. Bot. A.18: 444. 1971; Long & Lakela, Fl. Trop. Fla. 16, 733, 738, & 934. 1971; Moldenke, Fifth Summ. 1: 5, 28, 55, 67, 68, 77, 78, 81--85, 87, 90, 92--95, 98, 100, 102, 104, 106--109, 111, 112, 115, 122, 129, 131--133, 135, 139, 140, 147, 148, 181, 185, 188, 195, 203, 214, 228, 272, 280, 299, 319, 350, 356, 357, 375, 382, 391, 395, 396, 403, 424, 426--438, 452, 461, 468, 471--474, & 487 (1971) and 2: 491, 518, 525, 526, 531, 533, 548, 557, 558, 569--571, 595, 616, 617, 619, 620, 645, 731, 741, 743, 756, 766, 768, 769, 772, 774--776, 786--789, 791, 792, 858--861, 968, 969, & 971. 1971; Rogerson, Mycologia 63: 1280. 1971; Roth & Mérida de Bifano, Act. Biol. Venez. 7: 131. 1971; Sáez T. & Nasser C., Revist. Biol. Trop. 18: 136. 1971; Troncoso, Darwiniana 16: [622]--626, fig. 1. 1971; Woodbury, Martorelli, & Garcia Tuduri, Journ. Agric. Univ. P. R. 55: 501--502. 1971; Moldenke, Phytologia 21: 147, 505, & 511 (1971), 22: 6 (1971), and 23: 180, 414, 415, 417, 418, 428, & 505. 1972; C. D. Adams, Flow. Pl. Jamaic. 627, 633, & 808. 1972; "A. K. W.", Biol. Abstr. 54: 2319. 1972; Alemán Frías, Aurich, Ezcurra Ferrar, Gutiérrez Vázquez, Horstmann, López Rendueles, Rodríguez Graquitená, Roquel Casabella, & Schreiber, Die Kulturpfl. 19: 422. 1972; Anon., Biol. Abstr. 54 (3): B.A.S.I.C. S.51 (1972) and 54 (5): B.A.S.I.C. S.52 & S.272. 1972; Anon., Commonw. Myc. Inst. Index Fungi 3: 823. 1972; Cabrera, Bol. Soc. Argent. Bot. 14: 258. 1972; Farnsworth, Pharmacog. Titles 7 (1): v. 1972; Fletcher in Hillier, Man. Trees & Shrubs, ed. 2, 76 (1972) and imp. ed., 76. 1972; Fong, Trojánkova, Trojánek, & Farnsworth, Lloydia 39: 147. 1972; Hinton & Rzedowski, Journ. Arnold Arb. 53: 167. 1972; Hocking, Excerpt. Bot. A.21: 30. 1972; Letouzey, Man. Bot. Forest. Afr. Trop. 2 (B): 361. 1972;

Moldenke, Biol. Abstr. 54: 1189 & 6295. 1972; A. L. Moldenke, Phytologia 23: 318. 1972; Rouleau, Taxon Index 1-20, part 1: 88. 1972; Tomlinson & Fawcett, Journ. Arnold Arb. 53: 386-389, fig. 1-11. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 257, 334, 525, 980, & 1207. 1973; Altschul, Drugs & Foods 245 & 351. 1973; Anon., Biol. Abstr. 55 (12): B.A.S.I.C. S.50 & S.268 (1973), 56 (2): B.A.S.I.C. S.52 (1973), and 56 (8): B.A.S.I.C. S.53 & S.287. 1973; K. E. Clausen, Biol. Abstr. 56: 4183 & 6566. 1973; Desch, Timber, ed. 5, imp. 2, 388. 1973; Farnsworth, Pharmacog. Titles 6, Cum. Ind. [31] (1973) and 8 (8): vi. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 658, 660, & 661. 1973; J. Hutchinson, Fam. Flow. Pl., ed. 3, 487 & 922. 1973; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 9 (13): 65. 1973; Moldenke, Biol. Abstr. 56: 653. 1973; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 42, 92-101, & 145, fig. 9. 1973; R. R. Rao, Stud. Flow. Pl. Mysore Dist. 2: 747 [thesis]. 1973; Tomlinson, Journ. Arnold Arb. 54: 120. 1973; Wedge, Pl. Names, ed. 1, 7. 1973; Wilder, Frag. Gard. 206 & 386. 1973; Moldenke, Phytologia 25: 227-230, 235, 236, 238, 368, 505, & 506 (1973), 26: 501 & 502 (1973), 27: 82, 84, 161, 289, 363, & 364 (1973), 27: 507 (1974), 28: 432-436, 444, 448, 454, & 507 (1974), and 29: 506. 1974; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Farnsworth, Pharmacog. Titles 9 (3): vi. 1974; R. D. Gibbs, Chemotax. Flow. Pl. 4: 2079. 1974; Heslop-Harrison, Ind. Kew. Suppl. 15: 33. 1974; Hocking, Excerpt. Bot. A.23: 290 & 293. 1974; Howes, Dict. Useful Pl. 96. 1974; "H. R.", Biol. Abstr. 57: 1904. 1974; Lasser, Braun, & Steyerma., Act. Bot. Venez. 9: 36. 1974; Little, Woodbury, & Wadsworth, Trees P. R. & Virg. Isls. 2 [U. S. Dept. Agr. Agric. Handb. 449]: 854, 858, 859, 990, 994, 995, 1000, 1001, 1004, & 1021, fig. 680. 1974; León & Alain, Fl. Cuba, imp. 2, 2: 280 & 298-301, fig. 129. 1974; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 14: 21 & 22. 1974; Moldenke, Biol. Abstr. 58: 684. 1974; A. L. Moldenke, Phytologia 28: 504 (1974) and 29: 171. 1974; Troncoso, Darwiniana 18: 297, 301, 302, 304, 373-375, 377, 378, 380, 408, & 411, fig. 26. 1974; Wedge, Pl. Names, ed. 2, 10. 1974; [Farnsworth], Pharmacog. Titles 7 Cum. Gen. Ind. [29]. 1975; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: 10-24, 27, & 49, fig. [1-4]. 1975; Moldenke, Phytologia 30: 181 & 507 (1975) and 31: 300-304. 1975.

It is worth noting here that the Rauwolfia L., a member of the Apocynaceae, is listed as such by Prain in the "Index Kewensis" Supplement 4 (1913) and is given as a synonym of Rauwolfia L. by Airy Shaw (1966).

The H.B.K. reference dates in the bibliography of Citharexylum have been authenticated by the late Dr. J. H. Barnhart, eminent botanical biographer and bibliographer.

Airy Shaw (1966) places Scleroön Benth. in the synonymy of Petitia Jacq., but this disposition is entirely incorrect. The only species described in Scleroön, S. oleimum, is the name-bringing synonym of Citharexylum oleimum (Benth.) Moldenke, as I pointed out in 1937.

The Endlicher (1838) reference cited in the bibliography of Citharexylum is often cited as "1836-1856", but the page involved was actually issued in 1838.

Martin (1946) reports finding no endosperm in the seeds of this genus. Desfontaines (1815) records the French vernacular names, "bois-guitare" and "bois-guitare", for member of this genus, while Hernandez (1943) records "chichicpatl" as the Mayan name.

Feng (1964) reports that pharmaceutical screening on an unidentified species of this genus "indicated a low mouse toxicity, no effect on the rat uterus, increased the flow through rat limb, no effect on guinea pig ileum, no effect on toad rectus muscle, and a pressor effect on dog blood pressure". Melchior (1964) reports that "mehrere Arten liefern Eisenholz". Rogerson (1971) reports the fungus, Epithele vermifera (Bourd.) Boquiren, as attacking a species in this genus, while the Commonwealth Mycological Institute (1972) lists Asteridiella vilis var. citharexyl.

Raimondi (1943) cites his nos. 3206, 3951, & 11906 as unidentified species of Citharexylum from Peru, the first two being from Cajamarca, collected in January, 1875. Foster (1958) lists C. mendocinum R. A. Phil. as a valid species from Bolivia, but this plant is actually a species of Grabowskia in the Solanaceae.

The Belshaw 3213, distributed as a Citharexylum, is actually Aegiphila smithii Moldenke and Martínez-Calderón 2253 is Clerodendrum ulei Hayek, while Pennington 295 is Vitex mollis H.B.K. and Hosséus 476 is not verbenaceous.

CITHAREXYLUM AFFINE D. Don

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 549. 1893; Prain, Ind. Kew. Suppl. 4, imp. 1, 49. 1913; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 549. 1946; Prain, Ind. Kew. Suppl. 4, imp. 2, 49. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 549. 1960; Hocking, Excerpt. Bot. A.11: 504 (1967) and A.12: 426. 1967; Moldenke, Phytologia 14: 430. 1967; Moldenke, Biol. Abstr. 49: 4199. 1968; M. Martinez, Pl. Med. Mex., ed. 5, 383. 1969; Gibson, Fieldiana Bot. 24 (9): 191. 1970; J. Rzedowski, Anal. Esc. Nac. Cienc. Biol. 18: 93. 1970; Moldenke, Fifth Summ. 1: 67, 356, 431, 433, 436, & 474 (1971) and 2: 787 & 858. 1971; Farnsworth, Pharmacog. Titles 7 (10): v. 1972; Fong, Trojánkova, Trojánek, & Farnsworth, Lloydia 39: 147. 1972; Hinton & Rzedowski, Journ. Arnold Arb. 53: 167. 1972; Moldenke, Phytologia 23: 414. 1972; Altschul, Drugs & Foods 245. 1973; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [29]. 1975.

Recent collectors describe this plant as a shrub, 1.5--8 m. tall, or a tree, 5--18 m. tall, the trunk 25 cm. in diameter at breast-height, the flowers fragrant, and the fruit turning from green to pale-orange or orange-red and finally blue-black, black, or "morado obscuro" when mature. They have encountered it in sandy loam soil in pinewoods, in oak woodland on dissected vol-

canic terrain, and variable woodland more or less marginal to tropical savannas, at altitudes of 150 to 2500 meters. Rzedowski found the plant growing in woods of Quercus and Cupressus with abundant lianas and epiphytes.

In addition to the months previously reported, the species has been found in fruit in December. Additional vernacular names reported for it are "jalacote" and "platanillo". Nevling & Gómez-Pompa assert that it is "scarce in secondary forests of Quercus". Altschul (1973) reports that its fruit is much eaten by birds; she cites Mexia 584 as the source of this information. The corollas are described as having been "white" on Chippendale 23682 and J. Rzedowski 22356, "pale-lavender" on Gentry & Gilly 10705, "deep-blue" on Gentry & Gilly 10826, and "morada" on Martínez-Calderón 2265. For additional information see under C. pterocladum Donn. Sm. in this series of notes.

Martínez (1969) reports that C. affine "Existe en el centro del país [Mexico] y suelo llamarse coral" and that "Se toma el cocimiento de las hojas contra los resfriados". Chippendale reports that this plant is "known as C. subserratum Swartz here [Australia], but no authentic specimens are held here, and specimens vary from [the] descriptions [of that species] available here. [It] appears more like C. spinosum."

Material of C. affine has been misidentified and distributed in some herbaria as C. subserratum Sw.

Additional citations: MEXICO: Colima: R. McVaugh 15697 (N). México: J. Espinosa 739 (Au—256507, Ip, M1); Hinton 9011 (Se—120070, Tu—112080); Pringle 6647 (Ms—30919); J. Rzedowski 22356 (Au—256410, Ip, M1, W—2546552, Ws). Nayarit: Feddema 718 (Au—263465, Ip); Gentry & Gilly 10705 (M1), 10826 (M1); Philbrick 760 (Ba). Veracruz: Lot 1219 (Ft); Martínez-Calderón 2265 (G); Nevling & Gómez-Pompa 2150 (Ld). CULTIVATED: Australia: Chippendale 23682 (W—2093050).

CITHAREXYLUM AFFINE var. GLANDULIFERUM Moldenke

Additional bibliography: Moldenke, Phytologia 6: 282—283. 1958; Moldenke, Fifth Summ. 1: 67 (1971) and 2: 858. 1971; Hinton & Rzedowski, Journ. Arnold Arb. 53: 167. 1972.

CITHAREXYLUM ALAINII Moldenke

Bibliography: Moldenke, Résumé Suppl. 17: 2. 1968; Moldenke, Biol. Abstr. 50: 6338. 1969; Moldenke, Phytologia 18: 70. 1969; Hocking, Excerpt. Bot. A. 15: 422. 1970; Moldenke, Fifth Summ. 1: 102 (1971) and 2: 858. 1971; Heslop-Harrison, Ind. Kew. Suppl. 15: 33. 1974.

Liogier describes this plant as a slender shrub, to 2 m. tall, with upright branches, white flowers, and orange-red fruit. He has found it growing, "uncommon" or "rare", on steep slopes in exposed places on limestone ridges and in thickets and woods and on limestone crests, at altitudes of 700—850 meters, flowering in

May and June and fruiting in October.

Citations: HISPANIOLA: Dominican Republic: A. H. Liogier 11205 (N—isotype, N—isotype, N—isotype, N—isotype, Z—type), 13324 (Ld, N), 15547 (Ld, N, W—2576807A), 15673 (Ac, N, W—2576976A).

CITHAREXYLUM ALBICAULE Turcz.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 549 (1893) and imp. 2, 1: 549. 1946; Moldenke, Phytologia 6: 283—284. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 549. 1960; Moldenke, Fifth Summ. 1: 94, 356, & 426 (1971) and 2: 858. 1971; León & Alain, Fl. Cuba, imp. 2, 2: 299. 1974; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: 12. 1975.

CITHAREXYLUM ALTAMIRANUM Greenm.

Additional & emended bibliography: Prain, Ind. Kew. Suppl. 4, imp. 1, 49 (1913) and imp. 2, 49. 1958; Moldenke, Phytologia 13: 279. 1966; Moldenke, Fifth Summ. 1: 94, 356, & 426 (1971) and 2: 858. 1971.

Recent collectors describe this plant as a shrub, 6 feet tall, with subglobose dark reddish-purple fruit. They have encountered it on hilltops and in thin gravelly soil of oak-pine grassland on rocky hills, at altitudes to 7900 feet, flowering in August and fruiting in October.

Additional citations: MEXICO: Hidalgo: C. L. Lundell 12557 (Au—280308, Au—280309); Taylor & Taylor 6220 (N).

CITHAREXYLUM AMAZONICUM Moldenke

Emended synonymy: Cytharexylon cinereum L. ex Le Cointe, Amaz. Bras. III Arv. & Pl. Uteis, ed. 1, 349. 1934 [not Citharexylon cinereum L., 1851, nor Spreng., 1851, nor Citharexylum cinereum L., 1763, nor Sessé & Moc., 1894, nor Donn. Sm., 1907, nor Jacq., 1909].

Additional & emended bibliography: Le Cointe, Amaz. Bras. III Arv. & Pl. Uteis, ed. 1, 349. 1934; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 679. 1960; Moldenke, Phytologia 14: 430. 1967; Moldenke, Fifth Summ. 1: 147 & 474 (1971) and 2: 858. 1971.

CITHAREXYLUM AMBIGUUM Moldenke

Additional bibliography: Moldenke, Phytologia 13: 280. 1966; Moldenke, Fifth Summ. 1: 67 (1971) and 2: 858. 1971.

CITHAREXYLUM ANDINUM Moldenke

Additional bibliography: R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 668 & 671—672. 1960; Moldenke, Phytologia 13: 280. 1966; Moldenke, Résumé Suppl. 17: 3. 1968; Moldenke, Fifth Summ. 1: 181 (1971) and 2: 858. 1971; Troncoso, Darwiniana 18: 373, 375, & 408. 1974.

Macbride (1960) asserts that this species is "Closely related to C. Weberbaueri Hayek and C. flexuosum (R. & P.) D. Don, but dif-

fers from both in the acutely angled branchlets and glabrate leaves. Has been confused, also, with Duranta Plumieri Jacq., but the twigs are not covered with approximate sterigmata.....; from range, the Scolnik specimen would be more usually referable to the typically northern shrub of Ruiz & Pavón [C. flexuosum]. Actually, however, the Scolnik 1302, which he cites and which I also erroneously cited in my 1958 work, is Duranta cajamarcensis Moldenke. Troncoso (1974) cites only Günther 5863.

Additional citations: BOLIVIA: Santa Cruz: J. Steinbach 8572 (Ca--394832).

CITHAREXYLUM ARGUTEDENTATUM Moldenke

Additional bibliography: J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 669, 670, & 672. 1960; Moldenke, Phytologia 14: 430--431. 1967; Moldenke, Fifth Summ. 1: 139 & 431 (1971) and 2: 858. 1971.

Macbride (1960) comments that this species is "Related to C. ilicifolium HBK. and to C. pachyphyllum Mold. in its very thick-coriaceous, waxy-nitid holly-like leaves; the greatly reduced inflorescences are remarkable." He cites only Cook & Gilbert 719 & 745 from Cuzco and Goodspeed Exped. 30464 [Metcalf 30464] from Puno.

CITHAREXYLUM BERLANDIERI B. L. Robinson

Additional synonymy: Citharexylum berlandieri S. Wats. apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 496. 1906.

Additional bibliography: Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 496. 1906; Wangerin in Just, Bot. Jahresber. 51 (1): 555 [521]. 1923; Fedde in Just, Bot. Jahresber. 51 (2): 275. 1933; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 496 (1941) and imp. 3, 496. 1959; M. Martinez, Pl. Medic. Mex., ed. 4, 383. 1959; Moldenke, Phytologia 13: 280--281. 1966; Puig, Bull. Soc. Hist. Nat. Toulouse 103: 321. 1967; Burlage, Ind. Pl. Tex. 182, 194, 210, & 243. 1968; M. Martinez, Pl. Med. Mex., ed. 5, 383. 1969; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1814, 1824, 1847, & 1849. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1337--1338. 1970; Moldenke, Fifth Summ. 1: 55, 67, 356, 428, & 437 (1971) and 2: 858. 1971; R. D. Gibbs, Chemotax. Flow. Pl. 4: 2079. 1974.

Illustrations: M. Martinez, Pl. Med. Mex., ed. 5, 383. 1969.

Recent collectors describe this plant as a large, slender, erect shrub, 1--4 m. tall, bushy, or tree 4--5 m. tall, sparingly and loosely branched or densely branched at the top, the trunk 2.5--18 cm. in diameter at the base, the crown 1--2 m. in diameter, the bark gray-brown, smooth with vertical striations, the fruit at first green, then turning orange, dull-orange, salmon-color, or red, finally black, 1 cm. in diameter.

The corolla is usually described as "white", as, for instance, on Gillis 7883, C. L. Lundall 10715, Moore & Wood 3845, J. Rzedowski 23142, and Webster, Adams, Miller, & Miller 11307, but is

described as "cream, brownish at base" on Webster & Wilbur 3067 and as "white with yellow throat" on Traverse 1072.

Collectors have encountered C. berlandieri on clay dunes, in the foothills, in thickets, on limestone cliffs, along trails, and in thickets of Prosopis juliflora, Celtis pallida, Condalia, Malpighia glabra, etc., at altitudes of 3 to 1600 meters, flowering in February, April, and June to October, and fruiting in April and from June to December. Rzedowski found it on "ladera caliza con vegetación de bosque tropical deciduo", on "terrenos margosos con vegetación de bosque espinoso", and on "ladera caliza con encinos". Graham & Johnston encountered it on "sandy ridges in brush with some prairie openings" and on "brushed caliche mesa slopes"; Webster and his associates found it "in thorn woodland on basalt overlying calcareous conglomerate"; Crutchfield & Johnston report it from among "brush on soil derived from basic basaltic igneous rock"; while Traverse found it growing "in open scrub with many dead and dying shrubs, gray-buff sand in Celtis-Opuntia-Zizyphus complex".

Burlage informs us that in Texas the species is "confined to the valley of the Lower Rio Grande River". Graham & Johnston describe it as "frequent"; Crutchfield & Johnston refer to it as an "abundant shrub", while Medrano says that it is "regularly abundant in low primary evergreen woods". On the other hand, Graham & Johnston also refer to it as "infrequent", Ventura A. as "very rare", and Rowell as "not a dominant member of the flora".

Leavenworth says that C. berlandieri produces "reddish-green berries", but, of course, the fruits are drupes, not berries. The plant is used in the treatment of colds in Mexico. The common name, "Berlandier fiddlewood", is reported. Martinez (1969) says of the species "Se encuentra en Sinaloa, Tamaulipas, San Luis Potosí y Veracruz. En Tamaulipas se llama negrito, orcajuela o revienta cabra; sauco hediondo en Veracruz. Se toma el cocimiento de las hojas contra los resfrios".

It is worthy of note that Durand & Jackson (1906) credit this binomial to "S. Wats." in Proc. Americ. Acad. 26: 174 (1891), but consultation of this reference shows plainly that B. L. Robinson is the author of the article in question and is certainly the authority for the new binomial, albeit the paper was "Presented by Sereno Watson, April 8, 1891" in behalf of Robinson as stated on page 164, doubtless because Robinson was then a young man and not yet a member of the Academy so his paper had to be presented [i.e., vouched for] by a member in good standing.

Material of C. berlandieri has been misidentified and distributed in some herbaria under the names C. ciliare Moran and C. illicifolium H.B.K.

Additional citations: TEXAS: Cameron Co.: Correll & Correll 32148 (Ip); Cory 51396 (Mi, Se--123672); G. L. Fisher 41195 (Au--120943); Fleetwood 3460 (Au); M. C. Johnston 253-16 (Au--120942); C. L. Lundell 10715 (Mi, N); Tharp, Gimbrede, & Johnston 52-524 (Au--120950, Bl--91602); Traverse 1072 (Au--179293), 1095 (Au--

169280); Webster & Wilbur 3067 (N). MEXICO: Hidalgo: H. E. Moore Jr. 2275 (Ba); Moore & Wood 3845 (W—2594869). San Luis Potosí: O. M. Clark 7415 (E—1287826); Leavenworth 232 (Tu—98501); Pringle 3222 (Ms—30921—isotype), 3734 (Ms—30920); J. Rzedowski 23134 (Ip, M1), 23142 (Au—256553, Ip, Ws), 23151 (Mi), 24497 (Z). Tamaulipas: Crutchfield & Johnston 5699 (Au—186414); Graham & Johnston 4081 (Au—174026), 4398 (Au—174139), 4404 (Au—174462), 4542 (Au—174930); Kenoyer C.139 (Au—120940); Medrano 881 (M1); Puig 2931 (Ip); Rowell 2302 (Au—192610); Webster, Adams, Miller, & Miller 11307 (Au—262626). Veracruz: F. Chiang 43 (O), 280 (G); M. Rosas R. 649 (A); Ventura A. 4062 (M1). CULTIVATED: California: R. Moran 2773 (Ba). Florida: Gillis 7883 [Herb. Fairchild Trop. Gard. X-2-305; U. S. Dept. Agr. Pl. Introd. 78537] (Ba, Ft—2550), 11100 (Ld); A. Grant 1316 [Herb. Fairchild Trop. Gard. 92093] (Ba, Ft—2185); R. W. Read 1341 [Herb. Fairchild Trop. Gard. X-13-9a] (Ba), 1462 (Ft—2184).

CITHAREXYLUM BOURGEOUANUM Greenm.

Additional & emended bibliography: Prain, Ind. Kew. Suppl. 4, imp. 1, 49 (1913) and imp. 2, 49. 1958; Moldenke, Phytologia 13: 281. 1966; Moldenke, Fifth Summ. 1: 67 (1971) and 2: 858. 1971.

Sousa encountered this plant growing in high evergreen forests, at 380 meters altitude, fruiting in January.

Additional citations: MEXICO: Veracruz: Sousa 3409 (E—2069201).

CITHAREXYLUM BRACHYANTHUM (A. Gray) A. Gray

Additional & emended synonymy: Lycium brachyanthum A. Gray ex Hemsl. in Godman & Salvin, Biol. Cent.-Am. Bot. 2: 426. 1882. Citharexylum brachyanthum Gray apud C. L. Hitchc., Ann. Mo. Bot. Gard. 19: 331, 343, 352, & 364. 1932. Basistemon brasiliensis Moldenke, Revist. Sudam. Bot. 4: 15. 1937. Citharexylum brachyanthum A. Gray ex Moldenke, Résumé Suppl. 18: 9, in syn. 1969. Citharexylum brachyautum Gray, in herb.

Additional & emended bibliography: Hemsl. in Godman & Salvin, Biol. Cent.-Am. Bot. 2: 426. 1882; C. L. Hitchc., Ann. Mo. Bot. Gard. 19: 191, 331, 343, 352, & 364, pl. 13, fig. 7—10, & 19, fig. 22—24. 1932; Moldenke, Revist. Sudam. Bot. 4: 15. 1937; Wangerin & Krause in Just, Bot. Jahresber. 60 (1): 753 [371]. 1941; Hocking, Excerpt. Bot. A.11: 504. 1967; Moldenke, Phytologia 14: 431. 1967; Moldenke, Biol. Abstr. 49: 4199. 1968; Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1813, 1814, & 1827. 1970; Moldenke in Correll & Johnston, Man. Vasc. Pl. Tex. [Contrib. Tex. Res. Found. Bot. 6:] 1337 & 1338. 1970; Moldenke, Fifth Summ. 1: 55, 67, 428, 431, & 432 (1971) and 2: 569 & 858. 1971.

Emended illustrations: C. L. Hitchc., Ann. Mo. Bot. Gard. 19: pl. 13, fig. 7—10, & 19, fig. 22—24. 1932.

The name, Basistemon brasiliensis, is based on a Reineck specimen in the herbarium of the Royal Botanic Garden at Edinburgh, un-

numbered, and, according to its label, collected in April, 1898, "in campis lepidosis montis 'Morro d'hospicio'", Parthenão, Porto Alegre, Rio Grande do Sul, Brazil. This must be a case of mis-labeling since, as far as I know, Citharexylum brachyanthum does not occur, either wild or in cultivation, in Brazil. Certainly my wife and I, who collected at the locality mentioned near Porto Alegre in 1948, did not see it there. Osten -- as reported by me in a previous publication -- has told us in very colorful terms that many of Reineck's specimens are grossly mis-labeled.

Recent collectors describe C. brachyanthum as a low bushy shrub, 1--1.5 m. tall, or a bush, 4--5 m. tall, the fruit red, bright-red, or scarlet. The fruit is referred to as "berries" by Crutchfield & Johnston, but is actually a drupe. Collectors have found the plant growing in alluvial soil with matorral of Larrea or of Larrea and Myrtillocactus, in sandy loam, and on rocky hills, at altitudes of 1175 to 2000 meters, flowering in June and August, and fruiting from August to October. The Taylors found it "in mesquite-Acacia shrubland with creosotebush and tree cactus abundant, the soil shallow, yellow, over soft limestone". Johnston describes it as "very sparse in short brush on limestone hilltops" and "infrequent in desert scrub on protruding basalt dikes". Johnston & Miller refer to it as an "infrequent bush on silty plain, local". Mears found it growing with Krameria, Cissus, Jatropha, and Koeberlinia spinosa. Johnston found it in Nuevo León in desert Larrea association on gently sloping limestone upland, while in San Luis Potosí he and Crutchfield found it as "infrequent shrubs to 3 feet tall in desert scrub on limestone hillsides". Rzedowski encountered it in "terranos aluviales con matorral de Myrtillocactus y Larrea". An additional vernacular name recorded for it is "chile de pájaro". The corollas are described as "white" on Johnston & Muller 346 and J. Rzedowski 10800.

Material has been misidentified and distributed in some herbaria as C. spathulatum Moldenke & Lundell and as Lycium sp.

Additional citations: TEXAS: Webb Co.: J. Baird s.n. [July 4, 1960] (Au); Benavides 99 (Au--23307). Zapata Co.: Araiza 19 (Au). MEXICO: Coahuila: M. C. Johnston 5871 (Au--188237); Johnston & Muller 346 (Au--300421). Nuevo León: O. M. Clark 6653 (E--1288336); M. C. Johnston 2795 (Au--123002), 2804 (Au). San Luis Potosí: Crutchfield & Johnston 5656 (Au); Mears 146a (Au), 146b (Au), 146c (Au); Pringle 3749 (Ms--30922); J. Rzedowski 7636 (Au), 10800 (Au, Ip, M1, Ws). Zacatecas: J. Rzedowski 9323 (Au, Ip); Taylor & Taylor 5851 (N). LOCALITY OF COLLECTION UNDETERMINED: Reineck s.n. [IV.1898; Porto Alegre, Brazil] (Ed).

CITHAREXYLUM BRAZOSENSE Berry

Additional bibliography: LaMotte, Geol. Soc. Am. Mem. 51: [Cat. Cenoz. Pl. N. Am.] 127. 1952; Moldenke, Phytologia 6: 298--299. 1958; Moldenke, Fifth Summ. 1: 375 & 428 (1971) and 2: 858. 1971.

CITHAREXYLUM BULLIATUM Moldenke

Bibliography: Moldenke, Phytologia 27: 289 (1973) and 28: 434. 1974; Moldenke, Biol. Abstr. 58: 684. 1974.

Material of this species has been misidentified and distributed in some herbaria as C. subflavescens Blake, a closely related species.

Citations: COLOMBIA: Cundinamarca: Barclay, Juaibioy, & Gama 3189 (N—photo of type, W—2702233—type, Z—photo of type).

CITHAREXYLUM CAUDATUM L.

Additional & emended synonymy: Citharexylum fruticosum, foliis subellipticis, petiolis pedatis, calicibus truncatis, spicis terminalibus longioribus Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 265. 1755. Citharexylum erectum Sw. apud J. F. Gmel. in L., Syst. Nat., ed. 13, imp. 1, 2: 943. 1789. Cytharexylum caudatum L. ex Moldenke, Prelim. Alph. List Invalid Names 24, in syn. 1940. Citharexylum cordatum Stevens ex Hansford, Sydowia Ann. Myc., ser. 2, Beih. 2: 686, hyponym. 1961 [not C. cordatum Hort., 1973].

Additional & emended bibliography: Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 265. 1755; [Retz.], Nom. Bot. 151. 1772; J. F. Gmel. in L., Syst. Nat., ed. 13, imp. 1, 2: 943. 1789; Sloane, Civil & Nat. Hist. Jamaic., ed. 2, 265. 1789; Rausch., Nom. Bot., ed. 3, 173. 1797; Desf., Tabl. Écol. Bot., ed. 1, 54 (1804) and ed. 2, 65. 1815; Pers., Sp. Pl. 3: 356. 1819; Voigt, Hort. Suburb. Calc. 473. 1845; Kuntze, Rev. Gen. Pl. 2: 504. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 549. 1893; W. E. Broadway, Gard. Chron., ser. 3, 30: 473. 1901; A. R. Northrop & J. I. Northrop, Naturalist in Bahamas 180 & 204. 1910; Goyena, Fl. Nicaragua. 1: 564. 1911; Moldenke, Carnegie Inst. Wash. Publ. 522: 190 & 193—194. 1940; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 549. 1946; Metcalfe & Chalk, Anat. Dicot. 1033. 1950; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14355. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 549. 1960; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 668—670, 672, 673, & 677. 1960; Hansford, Sydowia Ann. Myc., ser. 2, Beih. 2: 686. 1961; Little & Wadsworth, Common Trees P. R. [U. S. Dept. Agr. Forest Serv. Agric. Handb. 249:] 476 & 478—479, fig. 226. 1964; Moldenke, Phytologia 14: 431. 1967; Moldenke, Résumé Suppl. 16: 3 & 4. 1968; Dennis, Kew Bull. Addit. Ser. 3: 258. 1970; Gibson, Fieldiana Bot. 24 (9): 185 & 191. 1970; Moldenke, Fifth Summ. 1: 68, 78, 81, 82, 84, 85, 87, 90, 92—94, 98, 100, 102, 104, 109, 115, 139, 319, 350, 356, 426—436, & 474 (1971) and 2: 518, 531, 792, & 858. 1971; C. D. Adams, Flow. Pl. Jamaic. 633, 793, 794, & 808. 1972; Alemán Frías, Aurich, Ezcurra Ferrer, Gutiérrez Vázquez, Horstmann, López Rendueles, Rodríguez Graquitená, Roquel Casabella, & Schreiber, Die Kulturpfl. 19: 422. 1972; Moldenke, Phytologia 23: 428. 1972; Farnsworth, Pharmacog. Titles 8 (8): vi. 1973; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 93, 95—98, & 145, fig. 9. 1973; León & Alain, Fl. Cuba, imp. 2, 2: 299 & 301. 1974; Little, Woodbury, & Wadsworth, Trees P. R. & Virg. Isls. 2 [U. S. Dept.

Agr. Forest Serv. Agric. Handb. 449]: 858, 990, & 1000. 1974; Moldenke, Phytologia 28: 433. 1974; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: 12-14 & 21. 1975.

Additional & amended illustrations: Little & Wadsworth, Common Trees P. R. [U. S. Dept. Agr. Forest Serv. Agric. Handb. 249:] fig. 226. 1964; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 96, fig. 9. 1973.

Recent collectors refer to this plant as a small, "terrestrial", slender tree, 2-25 m. tall, much-branched, the trunk 2-7 inches in diameter, or a shrub, 2.5-13 m. tall, the bark smooth, gray, slightly fissured, "las ramas hacia arriba", the leaves leathery, yellow-green, the petioles "orangish", the inflorescence pendent, "brownish", the flowers fragrant with a strong sweet smell, the fruiting rachis "orangish", the fruit at first green or "green but orange-brown at the apex" or greenish turning to orange-brown, normally turning through yellow, light-orange, orange, to orange-red or red and then maroon, blue-black, purple, brown-black, red-black, or black when mature, glossy. Liogier says "frutos verdes volviéndose anaranjados". Gentle, Dwyer, and Wedel refer to the fruits as "berries", but they are drupes. Wedel also makes the curious statements on some of his labels: "red berry-like fl. " and "light red flower", but in both cases this is certainly a typographic error for "fr." and "fruits".

The calyx is described as pale-green or green with "orangish" margins when fresh. The corollas are almost uniformly described as "white" by collectors (e.g., Allen 3597, Bunting & Licht 1227, Duke 8548 & 9660, Dwyer 2025, Gentle 4793, Jiménez M. 2857, Johnston 228, Lewis, MacBryde, & Oliver 1853, Liogier 10350, 11495, 12037, & 15752, Molina R. 14818 & 14859, Proctor 8666, Ventura A. 5395, Wedel 805, 1058, 1158, 2469, 2778, & 2812, G. White 161, & P. White 101 & 102. However, on Crosby, Hespenheide, & Anderson 692 they are described as "white tinged with orangish in bud", on Wedel 1484 they were "cream-yellow", and on Kennedy 2276 they are described as having the "tube pale-green at base, lobes white, stamens white". On the label of Gentle 8488 the flowers are described as "orange", but the specimen is only in fruit, so it seems obvious that it is the fruits that are being thus described.

Allen refers to *C. caudatum* as a "common shrub" in Colón, Panama, but Luteyn found it "infrequent" there. Elias found it "common" near beaches on Soskatupu island; Lewis and his associates encountered it on beaches and adjacent roadsides in Colón. Duke reports it as "a fairly common shrub or small tree, to 5 inches diameter at breast height along the road" on San José island. Liogier says that it is "common" on knolls in the cloud-forest on Hispaniola; Crosby and his associates refer to it as "common on bushy hillsides" in Jamaica; Molina R. found it to be a "frequent" or a "common tree" in Nicaragua. Ventura A. refers to it as abundant in the "matorral en cañada" in Veracruz, Mexico.

Other recent collectors report finding *C. caudatum* in woods and forests, dwarf and lowland forests, wooded limestone hills,

dry dense limestone woodland, open woods of Pinus caribaea, and secondgrowth forests, on savannas and shores, in bogs and mangrove swamps, on riverbanks and river floodplains, along streams, in basalt areas on plains, in flat swampy areas over exposed limestone, and in pinelands on lateritic soil and limestone. It has been found growing in open sunlight in moist or open very moist habitats, flowering and fruiting in every month of the year. Adams (1972) asserts that in Jamaica it is "Common in thickets and woodlands in the limestone and shale hills", at altitudes from 700 to 5600 feet, flowering and fruiting most of the year. He cites Adams 10812, Harris 8546, and Howard & Proctor 13683 and gives its overall distribution as "Bahamas, Mexico to Colombia, Greater Antilles, Dominica", noting that "The criteria for distinguishing C. fruticosum and C. caudatum usually hold and are to a great extent correlated with a fairly distinct ecological separation of the two taxa."

Sloane (1755) calls this species the "white fiddle-wood" and says of it in Jamaica: "This tree is most frequent in the more hilly inland parts of the island: it grows to a very considerable size, and is commonly looked upon as a good timber-tree; but should be used where it may not be exposed to the weather. I have seen many of these trees in the mountains of St. Elizabeth's; but I have not observed any in blossom, and have only ranged them in this class, from the appearance of their berries, which agree in every respect with those of the other species."

Gentle 8488 and Liogier 10350 have at least their upper leaves definitely cucullate-mucronate. Dwyer 815 and Allen 1836 represent a small-leaved form (f. parvifolium Urb.) Ebinger 452 is voucher for a wood sample collection.

The C. cordatum of Stevens, based on F. L. Stevens 979 from Panama, is host to the fungus, Asteridiella villis var. caracasensis Hansfd., a fungus which also attacks C. subthyrsoideum Pittier in Venezuela.

Gibson (1970) adds the Central American C. macradenium Greenm. to the synonymy of C. caudatum, but, in my opinion, without justification.

Additional vernacular names recorded for C. caudatum are "bois guitare à longues grappes" and "fiddlewood".

Macbride (1960) says "Cultivated in Chile, Cuba, and Peru..... Moldenke notes, with reason, that the Peruvian collections must have been cultivated or persisting in abandoned areas, which explains Raimondi's observation....'indigenous at Chanchamayo'". He cites only Raimondi 12203 & 12507 from Peru, giving the species' overall distribution as "Mexico; West Indies".

Herbarium material of C. caudatum has been misidentified and distributed in some herbaria under the designations C. fruticosum L., C. lankesteri Moldenke, and C. lankesteana Dwyer. On the other hand, the Marcano s.n. [Herb. Jiménez 5408], distributed as C. caudatum, is actually C. discolor Turcz., while Stern, Eyde, & Ay-

ensu 1969 is C. donnell-smithii Greenm., Hespenheide, Hespenheide, Calver, & Ricklefs 1519 is C. fruticosum L., O. Degener 19051 is C. fruticosum f. bahamense (Mills.) Moldenke, Hespenheide, Hespenheide, Calver, & Ricklefs 976 & 1278 are xC. jamaicense Moldenke, León & Clément 6683 is the type collection of xC. leonis Moldenke, Burger & Gentry 8800 is C. macradenium Greenm., Bunting & Licht 1120 is C. mucronatum Fourn. & Moldenke, R. J. Wagner 1259 is xC. perkinsi Moldenke, and Stork 42 is C. viride Moldenke.

Additional citations: MEXICO: Veracruz: Ventura A. 5395 (Ws). BRITISH HONDURAS: Cox 3313 [Herb. Cox 2002] (Oa); Gentle 4793 (Au—224752, N), 8488 (Au—224456, N). NICARAGUA: Comarca del Cabo: A. Molina R. 15022 (N, W—2566892). Zelaya: Bunting & Licht 1227 (Ws); A. Molina R. 14818 (N, W—2566924), 14859 (N). COSTA RICA: Alajuela: Lent 1831 (N). San José: Jiménez M. 2857 (N, W—2537583); Taylor & Taylor 11297 (N, W—2734019). PANAMA: Bocas del Toro: H. von Wedel 261 (E—1217960), 775 (E—1226605), 805 (E—1226684), 1058 (E—1226101), 1146 (E—1226237), 1158 (E—1226244), 1484 (E—1227966), 2778 (E—1244920), 2812 (E—1245356). Canal Zone: P. H. Allen 1836 (E—1192521); J. A. Duke 4598 (E—1785557); Dwyer & Robyns 151 (E—1822891); E. L. Tyson 1109 (E—1813060), 2034 (E—1820176); Gene White 161 (E—1189794), 163 (E—1191692); Peggy White 101 (E—1192442, E—1233128), 102 (E—1192441). Coclé: J. D. Dwyer 815 (E—1799735), 2025 (E—1781807), 2035 (E—1799799). Colón: P. H. Allen 3597 (E—1572386); Blum & Dwyer 390 (E—1817310); Dwyer & Robyns 169 (E—1823286); Ebinger 452 (E—1938936, W—2653586); Lewis, MacBryde, & Oliver 1853 (E—1887603, Oh, W—2545845); Luteyn 1281 (Mi). Panamá: Croat 12391 (N); Smith & Smith 3452 (W—2645621). San Blas: J. A. Duke 8548 (E). Colón Island: H. von Wedel 2469 (E—1240511). Old Bank Island: H. von Wedel 2028 (E—1232385). Shepherd Island: H. von Wedel 2726 (E—1245134). Soskatupu Island: T. S. Elias 1683 (E—1893975, Oh, W—2545877). PEARL ISLANDS: San José: J. A. Duke 12507 (E—1908632); I. M. Johnston 228 (E—1590824); H. Kennedy 2276 (W—2745296). BAHAMA ISLANDS: Andros: J. Popenow s.n. [June 16, 1965] (Ft—2183). CUBA: Havana: C. F. Baker s.n. [Aug. 1907] (N). Las Villas: A. Gonzales 190 (N). JAMAICA: Anderson & Sternberg 3094 (Mi); Crosby, Hespenheide, & Anderson 692 (N); G. R. Proctor 8666 (W—2584893), 26629 (N); Proctor, Morley, & Whiteford 940 (W—2724734); Stearn 93 (Ba). HISPANIOLA: Dominican Republic: Gastony, Jones, & Norris 427 (W—2657580); A. H. Liogier 11495 (Ac, N, N, N), 12037 (Ac, N, N, N, N), 12939 (Ld, N, N, N), 15752 (Ld, N), 20611 (N). PUERTO RICO: A. H. Liogier 10350 (N); E. L. Little 13563 (N, W—2533100), 16315 (N). COLOMBIA: Chocó: J. A. Duke 9660 (Ld). CULTIVATED: Cuba: C. F. Baker 23

(Pd). Hawaiian Islands: Degener & Murashige 20075 (Ms—34216),
22470 (Tu—127443).

CITHAREXYLUM CHARTACEUM Moldenke

Additional bibliography: J. F. Macbr., Field Mus. Publ. Bot.
 13 (5): 669, 670, & 673. 1960; Moldenke, Phytologia 14: 507. 1967;
 Hocking, Excerpt. Bot. A.13: 569. 1968; Moldenke, Biol. Abstr.
 49: 2769. 1968; Moldenke, Fifth Summ. 1: 135, 139, & 356 (1971)
 and 2: 775 & 858. 1971.

Macbride (1960) comments that C. chartaceum is "Related to C. quitense Spreng. and referred in herbaria to C. molle HBK.; the thin leaves with delicate but conspicuous and yet not at all elevated venation on the lower surface, and the lanate corollathroat, characterize it well.....Tree or shrub 5—8 meters tall, in deciduous brushwood." He cites only Weberbauer 7633 & 7678 from Peru, with "Ecuador" as extra-limital distribution.

CITHAREXYLUM COOPERI Standl.

Additional & amended bibliography: A. W. Hill, Ind. Kew. Suppl.
 8: 53. 1933; Moldenke, Phytologia 6: 312—314. 1958; Moldenke,
 Résumé Suppl. 16: 3. 1968; Gibson, Fieldiana Bot. 24 (9): 185—
 186 & 189 (1970) and 32: 177. 1970; Moldenke, Fifth Summ. 1: 81,
 82, & 90 (1971) and 2: 858. 1971; Moldenke, Phytologia 23: 415.
 1972; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60:
 93, 100—101, & 145. 1973.

Recent collectors describe this plant as a shrub or small tree, 1—2 m. tall, the stems 1 1/2 inches in diameter, and the corollas white (Standley 55697). They have encountered it in pastures, at 20 meters altitude, flowering in February and May. It is called "wild lime" in Panama.

Gibson (1970) notes in her discussion of C. hirtellum Standl. that "This has sometimes been confused with C. cooperi Standley, perhaps partly because C. hirtellum was not understood to be heterostylous. The calyx of C. cooperi, which is 3—4 mm. long, is always conspicuously and evenly dentate. In addition, the racemes of C. cooperi branch to form short panicles, 2—8 cm. long, and the leaves usually have 8—10 pairs of lateral veins."

The species is very closely related to and similar to C. viride Moldenke, but the two taxa may be distinguished as follows:

Leaf-blades subglabrate, pulverulent, or merely puberulent on the lamina beneath, more or less distichously short-pubescent only along the midrib.....C. viride

Leaf-blades rather densely velutinous over the entire surface beneath.....C. cooperi

Citharexylum cooperi has been abundantly confused, and even cited by me in previous publications, as C. hirtellum Standl. On the other hand, the P. H. Allen 3661, Brenes 12322, C. P. Cooper 384, Dwyer & Hayden 7762, Jiménez M. 1165, Molina R., Burger, Jiménez M., & Wallenta 18045, Stork 42, and Woodson & Schery 755,

distributed as and even cited by me previously as C. cooperi, are actually C. viride Moldenke.

Additional citations: BRITISH HONDURAS: Gentle 238 (Au, Mi, N, S, W—1493345), 435 (F—702163, I, K, La, Mi, N, S), 1177 (A, E—1075886, F—733459, G, I, K, Mi, N, N, Tu—83668). HONDURAS: Atlántida: P. C. Standley 55697 (A, F—581347, N, W—1408897).

CITHAREXYLUM COSTARICENSE Moldenke

Additional bibliography: Moldenke, *Phytologia* 6: 314—316. 1958; Moldenke, *Fifth Summ.* 1: 87 (1971) and 2: 858. 1971.

The Lent 2014, distributed as C. costaricense, is actually C. donnell-smithii Greerm.

Additional citations: COSTA RICA: Alajuela: A. Smith H.467 (E—1138544).

CITHAREXYLUM CRASSIFOLIUM Greerm.

Additional & emended bibliography: Prain, *Ind. Kew. Suppl.* 4, imp. 1, 49 (1913) and imp. 2, 49. 1958; Moldenke, *Phytologia* 6: 316—317. 1958; Gibson, *Fieldiana Bot.* 24 (9): 184, 186, & 191. 1970; Moldenke, *Fifth Summ.* 1: 68, 78, & 432 (1971) and 2: 858. 1971; Moldenke, *Phytologia* 23: 415. 1972.

Gibson (1970) cites only Türckheim 1308 from Guatemala, but avers that the species occurs also in Baja Verapaz, Chimaltenango, and Zacapa, as well as in Chiapas, Mexico, and in British Honduras.

CITHAREXYLUM DAWEI Moldenke

Additional bibliography: Moldenke, *Phytologia* 14: 431—432. 1967; Moldenke, *Fifth Summ.* 1: 115 & 122 (1971) and 2: 858. 1971; Moldenke, *Phytologia* 28: 436. 1974; López-Palacios, *Revist. Fac. Farm. Univ. Los Andes* 15: 10—11 & 14—16. 1975.

My friend, Santiago López-Palacios, who is doing such intensive field work in Venezuela, asserts definitely that C. dawei does not occur in Delta Amacuro; my previous citations from that state actually represent C. decorum Moldenke. He comments (1975) that "Cuando estudié en Kew el tipo de C. dawei, constaté que no concordaba con ninguno de los especímenes venezolanos atribuidos a este taxon. Además, el tipo había sido colectado por Dawe en Chipaque, Cundinamarca, Colombia, localidad que se encuentra entre los 2.400 y los 2.600 m., ya en piso térmico frío; y si de la población se asciende hacia el llamado Boquerón de Chipaque, se llega hasta una altura de 3.250 m. Los ejemplares venezolanos atribuidos al C. dawei....provenían de baja altura o aun del mismo nivel del mar. Eran ellos Curran & Haman 1309 y 1316 (GH), de Pedernales en el Delta Amacuro, y Karsten s.n. (V), de Píritu, Anzoátegui, a nivel del mar, que creo sean C. fruticosum var. brittonii, por su envés escasamente indumentado y por su cáliz dentado; y Lasser & Foldats 3087 (VEN), de Churuguara, Falcón, citado.....como C. dawei, quizás por tener truncos la mayoría

de sus cálices, pero que en todo lo demás concuerda con C. decorum.

"El ejemplar 1316 de Curran & Haman fue distribuido por los colectores como C. subthyrsoideum, pero se excluye de esta taxon por su envés indumentado. Es un ejemplar anómalo, con la infrutescencia fasciada. Por desgracia, en viaje que hice al Delta Amacuro, no se pudo encontrar en Pedernales un solo ejemplar de Citharexylum para salir definitivamente de dudas, ya que las muestras de Curran & Haman son muy fragmentarias y pobres. Brito 4 (VEN), con seguridad es C. venezuelense.

"También yo incurrí en otro error de apreciación y había distribuido como C. dawei algunos ejemplares merideños, p.e., Ruiz-Terán & López-Figueiras 1793 (MERF) y Ruiz-Terán & López-Palacios 6213 (MERF), que el Dr. Moldenke determinó en forma correcta y segura como C. karstenii var. lanceolatum.....Excluyo, pues, este taxon para la Flora de Venezuela, y no creo que el C. dawei exista a bajas alturas y menos a nivel del mar. En las zonas entre el Delta Amacuro y Falcón, de este grupo, se encuentran en Venezuela el C. fruticosum con alguno de sus híbridos o variedades, el C. decorum y el C. venezuelense."

The Curran & Haman 1309 & 1316, distributed and previously cited by me as C. dawei, are actually C. decorum Moldenke, while Ruiz-Terán & López-Figueiras 1793 and Ruiz-Terán & López-Palacios 6213 are C. karstenii var. lanceolatum Moldenke.

CITHAREXYLUM DECORUM Moldenke

Additional bibliography: Moldenke, Phytologia 14: 432. 1967; Moldenke, Fifth Summ. 1: 122 (1971) and 2: 858. 1971; Moldenke, Phytologia 25: 228 (1973) and 28: 436. 1974; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: 11--12 & 15, fig. [1]. 1975.

Illustrations: López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: fig. [1]. 1975.

Recent collectors describe this plant as a tree, 7--10 m. tall, the trunk 40 cm. in diameter, the leaves pale-green above, gray-green beneath, varying from opposite to approximate or subternate, glabrous above, velutinous beneath, the calyx persistent, green, and the fruit reddish-green. They have found it growing at 900 m. altitude, in fruit in August, and report the vernacular name, "cazabito".

López-Palacios (1975) comments that "Aun cuando en la descripción original de Moldenke se habla de racimos sin ramificarse, sin embargo, en el isótipo de G. aparece una pequeña ramificación en la parte basal.....No conozco colecciones de Bolívar: quizás pudo haber sido considerada como de est Estado Blanco 914 (VEN), que es de Yaracuy. Como se dijo atrás, se traen acá Curran & Haman 1309 & 1316 [= C. fruticosum var. brittonii] y Lasser & Foldats 3087 [= C. decorum]. Brito 4, del Departamento Vargas, se lleva a C. venezuelense. Además se cita una nueva localidad: Lara, Smith V869 (VEN) Agua Salada-Pico Pico."

Herbarium material of C. decorum has been misidentified and distributed in some herbaria, and even previously erroneously cited by me, as C. dawei Moldenke.

Additional citations: VENEZUELA: Delta Amacuro: Curran & Haman 1309 (Ca—924130, E—1258629), 1316 (Ca—924040, Ve—12548). Federal District: López-Palacios 3087 (Id, Z). Yaracuy-Falcón: C. A. Blanco 914 (N).

CITHAREXYLUM DENTATUM D. Don

Additional synonymy: Citharexylum dentatum [Tafalla] D. Don apud J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 673. 1960.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 549 (1893), imp. 2, 1: 549 (1946), and imp. 3, 1: 549. 1960; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 669, 671, 673—674, 676, & 678. 1960; Hocking, Excerpt. Bot. A.5: 43. 1962; Moldenke, Phytologia 13: 285. 1966; Moldenke, Fifth Summ. 1: 139 (1971) and 2: 616, 617, & 858. 1971.

Macbride (1960) asserts that C. dentatum "Apparently is the correct name for at least the individuals cited under C. ilicifolium HBK. and C. pachyphyllum Mold. A 5-meter tree, the berries said to be used for making ink (Story & Horton). Type by Ruiz and Pavón, perhaps from near Tarma, the name by Tafalla in part of the expedition's collections but as a species of Rauwolfia." He cites Ruiz & Pavón s.n. from Junín, Stork & Horton 10336 from Huancavelica, and Weberbauer 5537 from Ayacucho, Peru. He is in error in referring to the fruit as "berries"; they are drupes.

CITHAREXYLUM DISCOLOR Turcz.

Additional synonymy: Clerodendrum discolor Turcz. ex Moldenke, Fifth Summ. 1: 461, in syn. 1971 [not C. discolor (Klotzsch) Vatke, 1882].

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 549. 1893; A. W. Hill, Ind. Kew. Suppl. 8: 53. 1933; Fedde & Schust. in Just, Bot. Jahresber. 57 (2): 401. 1938; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 549 (1946) and imp. 3, 1: 549. 1960; Moldenke, Phytologia 14: 432. 1967; Moldenke, Fifth Summ. 1: 95, 102, 426, 432, 433, & 461 (1971) and 2: 858. 1971; León & Alain, Fl. Cuba, imp. 2, 2: 299 & 301. 1974.

Recent collectors describe this plant as a shrub, 2—6 m. tall, a small tree, or even a "tall tree, 8 m. tall", much branched, the trunk slender, the branches spreading and drooping, and the fruit at first green, then turning to orange, orange-red, red, or "pardo-rojizo". They have found it growing in thickets and in dense woods in ravines, at altitudes of 1100—2000 meters, flowering in April, May, July, and August, and fruiting in July, September, and November. The corollas are described uniformly as "white" (e.g., Gastony, Jones, & Norris 622, Llogier 11382, 12509, & 19447, and Marcano s.n.).

Gastony and his associates refer to this species as a frequent roadside shrub in essentially virgin rainforest on limestone mountains; Marcano also calls it "common", while Liogier says it is "common in woods" and "very common in rainforest", but "uncommon in deep woods in cloudforest". Liogier 12540 represents a small-leaved form. This collector refers to the fruits as "berries", but they actually are drupes. The vernacular name, "penda", is recorded for the plant.

The Clerodendrum discolor (Klotzsch) Vatke, referred to in the synonymy above, is a valid species of glorybower in Africa.

Material of Citharexylum discolor has been misidentified and distributed in some herbaria as C. caudatum L.

Additional citations: HISPANIOLA: Dominican Republic: Gastony, Jones, & Norris 622 (N, N, W—2657530); Howard 12304 (N); Liogier 11382 (Ld, N, N), 12509 (Ld, N, N), 12540 (Ac, N, N, N, N, N, N, N, N, N), 13438 (Ac, N), 16012 (Ac, N); Liogier & Liogier 19447 (N, W—2753354); Marcano s.n. [Herb. Jiménez 5408] (N, W).

CITHAREXYLUM DONNELL-SMITHII Greenm.

Additional synonymy: Citharexylum donnell-smithii Greenm. ex Moldenke, Fifth Summ. 1: 427, in syn. 1971. Citharexylum donnell-smithii Greenm. ex Moldenke, Phytologia 28: 454, in syn. 1974.

Additional & amended bibliography: Prain, Ind. Kew. Suppl. 3: 43 (1908), 4, imp. 1, 49 (1913), and 4, imp. 2, 49. 1958; Saenz R., Revist. Biol. Trop. 13: 211. 1965; Moldenke, Phytologia 14: 431 & 432. 1967; Gibson, Fieldiana Bot. 24 (9): 184, 186, & 187, fig. 35. 1970; Moldenke, Fifth Summ. 1: 68, 78, 82, 84, 87, 90, 356, 424, 427, 430, & 472—474 (1971) and 2: 766 & 858. 1971; Moldenke, Phytologia 23: 415. 1972; Moldenke in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 93—95 & 145. 1973; Moldenke, Phytologia 28: 454. 1974.

Illustrations: Gibson, Fieldiana Bot. 24 (9): 187, fig. 35. 1970.

It should be noted that Gibson (1970) reduced C. recurvatum Greenm. to synonymy under C. donnell-smithii. She cites only J. D. Smith 1879 from Escuintla, Guatemala, and Cooper 5889 from Costa Rica, but avers that the species occurs also in Quezaltenango, Sacatepéquez, San Marcos, Suchitepéquez, and Zacapa, Guatemala, as well as in southern Mexico, Honduras, El Salvador, Costa Rica, and Panama.

Recent collectors have found C. donnell-smithii growing on forested hills, in upland woods, in mixed forests and mixed moist cloudforests, on steep heavily wooded slopes with Quercus and steep heavily wooded streambanks, at the edges of primary forests, in thickets and woodland pastures, in the open sunlight of moist pastures, at the edge of roadside woods, and in gray loam pasture soil, often in regions of 80 inches annual rainfall, at altitudes of 760—3000 meters, flowering from September to April, fruiting from February to July and in October and December. My wife and I encountered it growing in a cemetery in Guatemala.

Collectors describe this species as a small tree, 3--20 m. tall, the trunk 5.5--45 cm. in diameter at the base, to 20 cm. in diameter at breast height, the bark dark gray-brown and rough, the inflorescences pendulous, the flowers aromatic or even highly aromatic, the calyx deep-green, and the fruit at first green or green-yellow to brown, turning to yellow-orange or orange, heavy, greatly favored as food by wild pigeons. Croat describes the fruit as "green and brown" or "greenish to gold". Woodson and his associates describe the fruit as "berries yellow" and Luteyn notes "berries turning orangish-green" [the fruits, of course, are drupes, not berries].

Duke and Luteyn both refer to the species as "common". Molina & Montalvo describe it as "common in cutover forests" and Allen comments that it is "very common in potreros".

The corollas are almost uniformly described as "white" (e.g., Allen 4730, Allen & Armour 6798, Breedlove & Raven 13743, Burger 3842, Croat 13643, Davidson 483, Duke 9057, Gentry 6004, Lent 2236, Maurice 885, Molina R. 5841, Molina R. & Montalvo 21655, Molina R. & al. 16930, Stern & al. 1969, Ton 3888, and Wilbur & al. 10933), but on Peggy White 214 the flowers are described as "corolla-tube light-green, limb white".

Jiménez M. tells us that the "frutos amarillo anaranjado y otros verde pálido, globosos, brillantes, colgando de ramas múltiples en árbol de 10 m. de altura". Saenz (1965) reports that tertiary and quaternary alkaloids are absent from the stems and leaves of this species. Additional vernacular names reported for it are "chorrito", "paloma", and "palo paloma".

Material has been misidentified and distributed in some herbaria as *C. caudatum* L., *C. costaricense* Moldenke, *C. macradenium* Greenm., and *C. recurvatum* Greenm.

Additional citations: MEXICO: Chiapas: Breedlove 7848 (Ip); Breedlove & Raven 13743 (Ip); R. M. Laughlin 153 (Ip); F. Miranda 9162 (W-2508347); Ton 3887 (Du-603856, M1, N, W-2730168, Ws), 3888 (Du-603654). HONDURAS: Comayagua: A. Molina R. 5841 (W-2572456). EL SALVADOR: La Libertad: Molina R. & Montalvo 21655 (N). Santa Ana: Allen & Armour 6798 (Au-207518); Molina R., Burger, & Wallenta 16930 (N, N, W-2566790). COSTA RICA: Alajuela: Lent 2014 (N, W-2746455); A. F. Smith 26 [Stork 4126] (N). Guanacaste: Jiménez M. 1374 (N, W-2751900). Heredia: Hatheway 1279 (W-2512742); Lent 2236 (N). San José: Burger 3842 (N); Hatheway 1229 (W-2512716). PANAMA: Chiriquí: P. H. Allen 4730 (E-1371985, N); Croat 10429 (N), 13643 (N), 13646 (N), 13790 (N); M. E. Davidson 483 (E-1145859), 899 (E-1172425); J. A. Duke 9057 (N, Oh, W-2629830); A. Gentry 6004 (N); Luteyn 894 (N); Maurice 885 (E-1285844, E-1285845); Stern, Eyde, & Ayensu 1969 [wood spec. UWw.33749] (E-1839571, M1, W-2490115); Peggy White 214 (E-1190146); Wilbur, Weaver, Foster, & Correa 10933 (N); Woodson, Allen, & Seibert 870 (E-1170990, N).

CITHAREXYLUM DRYANDERAE Moldenke

Additional bibliography: Moldenke, Phytologia 13: 286. 1966; Moldenke, Fifth Summ. 1: 115 & 432 (1971) and 2: 774 & 858. 1971; Moldenke, Phytologia 28: 436. 1974; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: [23]. 1975.

The López-Palacios 3156 and López-Palacios & Bautista 3283, distributed as C. dryanderæ, are actually C. venezuelense Moldenke.

CITHAREXYLUM EKMANI Moldenke

Additional bibliography: Moldenke, Phytologia 6: 341—342. 1958; Moldenke, Fifth Summ. 1: 95 & 426 (1971) and 2: 858. 1971; León & Alain, Fl. Cuba, imp. 2, 2: 299 & 301. 1974.

CITHAREXYLUM ELLIPTICUM Sessé & Moc.

Additional bibliography: Moldenke, Phytologia 14: 432. 1967; Moldenke, Fifth Summ. 1: 68, 95, 356, 426, 427, 429—432, 434, 436, & 474—474 (1971) and 2: 766 & 858. 1971; R. D. Gibbs, Chemo-tax. Flow. Pl. 4: 2079. 1974; León & Alain, Fl. Cuba, imp. 2, 2: 298 & 299. 1974; Moldenke, Phytologia 28: 432. 1974.

Recent collectors describe this plant as a shrub, 1—3 m. tall, or a trailing shrub along the edges of sand dunes, the fruit red or black. Lot says "fruto rojizo y moreno". The plant has been found growing in secondary vegetation and also at sealevel on coastal dunes. The corollas are said to have been white on Calzada 352 and Ventura A. 5395. The leaves on Lot 1342 are all deeply dentate, but the specimen is sterile and so it probably represents a watersprout.

The species has been collected in flower in May and June and in fruit in February, May, June, and August. Ventura A. found it "abundant in matorral", while Calzada notes "abundant, rastrera".

The Ventura A. 2807, distributed as C. ellipticum, is actually C. hexangulare Greenm., while Enriquez 656 & 736 are not verbenaceous.

Additional citations: MEXICO: Veracruz: Barr, Dennis, & Hevly 62-728 (Tu—172579); Calzada 352 (Mi); Chiang 94 (Ld); H. Hernández s.n. [27/VII/1965] (Ld); R. M. King 1093 (Ip), 1143 (Ip); F. Miranda 8525 (W—2508348); G. B. Saunders 550 (W—2611157); Ventura A. 5395 (Mi, Tu—183848). BAY OF CAMPECHE ISLANDS: Sacrificios: Lot 1342 (Ac).

CITHAREXYLUM ENDLICHII Moldenke

Additional bibliography: Moldenke, Phytologia 6: 345—346. 1958; Moldenke, Fifth Summ. 1: 68 (1971) and 2: 858. 1971.

CITHAREXYLUM EOLIGNITICUM Berry

Synonymy: Citharexylon eoligniticum Berry, U. S. Geol. Surv. Prof. Paper 91: 346. 1916.

Additional bibliography: LaMotte, Geol. Soc. Am. Mem. 51: [Cat. Cenoz. Pl. N. Am.] 127. 1952; Moldenke, Phytologia 6: 346—347. 1958; Moldenke, Fifth Summ. 1: 375 & 429 (1971) and 2: 858. 1971.

CITHAREXYLUM FLABELLIFOLIUM S. Wats.

Additional bibliography: Moldenke, *Phytologia* 14: 432. 1967; Moldenke, *Résumé Suppl.* 15: 18 (1967) and 17: [1]. 1968; Moldenke, *Fifth Summ.* 1: 68, 77, 403, 433, & 437 (1971) and 2: 858. 1971.

Recent collectors describe this plant as a stiff lycioid shrub, 1-3 m. tall, 2-3 m. broad, often with several branches from the base, rather compact in the middle, but with weakly ascending branchlets, the stems 1.5 cm. in diameter at the base. They have encountered it among lava blocks, on roadsides and gentle slopes, in coarse calcareous soil of lowland in open mesquite grassland, and in fine sandy soil associated with *Pachycereus pringlei*, *Jatropha cinerea*, and *Bursera microphylla*, flowering in April and November, and fruiting in October, at 150-950 feet altitude. Moran found only a "few by small dry lake". Gentry 4721 is said to be a topotype.

The corollas are said to have been "pale-purple" on Gentry 4721, "purple" on Moran 9185, and "purplish-lavender with white to yellow throat" on Wiggins 15392. The leaves on Hastings & Turner 67-119 are very much larger than usual for this species.

Additional citations: MEXICO: Baja California: Hastings & Turner 64-196 (Tu-158159), 64-358 (Sd-61202, Tu-158591), 67-119 (Tu-180022); Thomas 8421 (Tu-137516); I. L. Wiggins 15329 (Se-298882), 15392 (Au-200413, Tu-177534). Sonora: Gentry 4721 (Tu-98514); Hastings, Warner, & Turner 61-41 (Tu-147570); Ripley 14282 (N). GULF OF CALIFORNIA ISLANDS: Carmen: R. V. Moran 9185 (Sd-66200).

CITHAREXYLUM FLEXUOSUM (Ruiz & Pav.) D. Don

Additional & emended synonymy: *Citharexylum spinosum* H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: 207. 1817 [not *C. spinosum* L., 1753]. *Colletia tetragona* Brongn., *Mém. Rhamnac.* 59. 1826.

Scypharia ? *tetragona* (Brongn.) Miers, *Ann. & Mag. Nat. Hist.*, ser. 3, 5: 216, hyponym (1860) and 6: 12-13 [as *Scypharia tetragona*]. 1860. *Scypharia tetragona* Miers apud Jacks. in *Hook. f. & Jacks.*, *Ind. Kew.*, imp. 1, 2: 856, in syn. 1895.

Additional & emended bibliography: H.B.K., *Nov. Gen. & Sp. Pl.*, ed. folio, 2: 207 (1817) and ed. quart., 2: 256. 1818; Brongn., *Mém. Rhamnac.* 59. 1826; Brongn., *Ann. Sci. Nat. Hist. Paris*, ser. 1, 10: 366. 1827; Miers, *Ann. & Mag. Nat. Hist.*, ser. 3, 5: 216 (1860) and ser. 3, 6: 12-13. 1860; Jacks. in *Hook. f. & Jacks.*, *Ind. Kew.*, imp. 1, 1: 549-550, 584, 804, & 884 (1893) and imp. 1, 2: 856. 1895; Barnhart, *Bull. Torrey Bot. Club* 29: 590. 1902; Prain, *Ind. Kew. Suppl.* 5, imp. 1, 60. 1921; Weberbauer, *Field Mus. Publ. Bot.* 8: 84. 1930; Jacks. in *Hook. f. & Jacks.*, *Ind. Kew.*, imp. 2, 1: 549-550, 584, & 804 (1946) and imp. 2, 2: 856. 1946; R. C. Foster, *Contrib. Gray Herb.* 184: 169. 1958; Jacks. in *Hook. f. & Jacks.*, *Ind. Kew.*, imp. 3, 1: 549-550, 584, & 804 (1960) and imp. 3, 2: 856. 1960; J. F. Macbr., *Field Mus. Publ. Bot.* 13 (5): 668, 671, 674-675, 677, & 680. 1960; Prain, *Ind.*

Kew. Suppl. 5, imp. 2, 60. 1960; Moldenke, *Phytologia* 14: 433. 1967; Moldenke, *Résumé Suppl.* 16: 20 & 26. 1968; Moldenke, *Fifth Summ.* 1: 140, 356, 428—431, 433, 434, 436, 468, & 487 (1971) and 2: 570, 571, 616, 617, 620, 645, & 859. 1971; Anon., *Biol. Abstr.* 54 (3): B.A.S.I.C. S.51. 1972; Moldenke, *Biol. Abstr.* 54: 1189. 1972; Moldenke, *Phytologia* 23: 180 & 417. 1972; Hocking, *Excerpt. Bot. A.* 23: 290. 1974.

I am very grateful to Dr. Marshall C. Johnston, who, in a letter to me dated November 8, 1967, called my attention to the two new synonyms for this species from the Rhamnaceae. It should also be noted here that the revised dates for the H.B.K. references given in the synonymy and bibliography above have been authenticated by the late Dr. John Hendley Barnhart (1902).

Macbride (1960) keeps C. megacanthum Rusby as a separate and distinct species, but cites only the original type collection (which he actually mis-cites as "R. L. Williams 2544"). He comments that "This was originally included as a synonym of C. flexuosum (R. & P.) D. Don", but this statement is inaccurate — the species was originally proposed as a new and distinct species by Rusby (1912). For what he regards as typical C. flexuosum Macbride says: "Often becoming completely or essentially glabrous except the puberulent calyx and white or paler corolla within. The var. subglabrum Mold.....apparently described the mature leaves of a form which proved to be Lycium subglabrum Mold..... The greenish-cream flowers are delightfully fragrant in the morning and the branches are used for small crosses, the spines serving as arms." He cites the following specimens from Peru: Ancash: Raimondi s.n. Arequipa: Guenther & Buchtien 129 & 120; Tafalla s.n.; Worth & Morrison 15700. Cajamarca: Bonpland s.n. Huánuco: Macbride 2279, 2438, 3173, & 3523; Ruiz & Pavón s.n. Lima: Killip & Smith 21679. He records the orthographic variant common name, "choloquillo simarrón". Worth & Morrison collected the species on rock slides. Macbride notes that Guenther & Buchtien 130 represents the "glabrate form".

The Edwin & Schunke V. 3927, distributed as C. flexuosum, is actually Duranta lineata Hayek.

CITHAREXYLUM FLEXUOSUM var. GLABERRIMUM Moldenke

Bibliography: J. F. Macbr., *Field Mus. Publ. Bot.* 60: 675. 1960; Anon., *Biol. Abstr.* 54 (3): B.A.S.I.C. S.51. 1972; Moldenke, *Biol. Abstr.* 54: 1189. 1972; Moldenke, *Phytologia* 23: 180 & 417. 1972; Hocking, *Excerpt. Bot. A.* 23: 290. 1974.

Macbride (1960) cites a Guenther & Buchtien 130 from Arequipa, Peru, under C. flexuosum (Ruiz & Pav.) D. Don with the comment "glabrate form". I have not seen this collection, but it may possibly represent the present variety.

Citations: PERU: Ancash: Smith & Blas 4905 (W—2591192A-type).

CITHAREXYLUM FORSITHIAEFOLIUM Massalonga

Additional bibliography: Moldenke, *Phytologia* 6: 353—354. 1958;

Moldenke, Fifth Summ. 1: 375 & 429 (1971) and 2: 859. 1971.

CITHAREXYLUM FRUTICOSUM L.

Additional synonymy: Citharexylon fruticosum, cortice cinereo, foliis oblongo-ovatis oppositis, petiolis marginatis pedatis, floribus spicatis, fructu majori Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 264. 1755. Citharexylum fruticulosum L. ex Moldenke, Alph. List Invalid Names Suppl. 1: 5, in syn. 1947. Citharexylum fruticulosum L. ex Moldenke, Phytologia 23: 428, in syn. 1972. Citharexylum fruticosum Shah, in herb.

Additional & emended bibliography: Sloane, Civil & Nat. Hist. Jamaic., ed. 1, 264 & 265. 1755; [Retz.], Nom. Bot. 151. 1772; J. F. Gmel. in L., Syst. Nat., ed. 13, imp. 1, 2: 942. 1789; Sloane, Civil & Nat. Hist. Jamaic., ed. 2, 264 & 265. 1789; J. F. Gmel. in L., Syst. Nat., ed. 13, imp. 2, 2: 942. 1796; Raeusch., Nom. Bot., ed. 3, 173. 1797; Desf., Tabl. Écol. Bot., ed. 1, 54. 1804; Willd., Enum. Pl. Hort. Berol. 2: 649. 1809; Desf., Tabl. Écol. Bot., ed. 2, 65. 1815; Pers., Sp. Pl. 3: 356. 1819; Kuntze, Rev. Gen. Pl. 2: 504. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 549 & 550. 1893; T. Peckolt, Bericht. Deutsch. Pharm. Gesell. 14: 475. 1904; C. S. Sarg., Man. Trees N. Am., ed. 1, 788 & 820. 1905; D. H. Scott in Solered., Syst. Anat. Dicot., transl. Boodle & Fritsch, 1: 633. 1908; Solered., Syst. Anat. Dicot. Ergänzt. 255. 1908; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 1, 2: 864—865 & 901, fig. 764 (1922) and ed. 2, 2: 864—865 & 901, fig. 764. 1926; Toro, Mycologia 19: 73. 1927; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 3, 2: 864—865 & 901, fig. 764. 1933; Navarro Haydon, Arb. Ornament. Puerto Rico 11. 1936; Wangerin in Just, Bot. Jahresber. 58 (1): 845 [275]. 1938; Fedde in Just, Bot. Jahresber. 58 (2): 514. 1939; Fedde & Schust. in Just, Bot. Jahresber. 60 (2): 571. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 549 & 550. 1946; West & Arnold, Nat. Trees Fla. 191. 1946; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 4, 2: 864—865 & 901, fig. 764. 1949; Asprey & Robbins, Ecolog. Monog. 23: 383. 1953; Hansford, Sydowia 10: 61. 1957; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 549 & 550. 1960; Hansford, Sydowia Ann. Myc., ser. 2, Beih. 2: 686. 1961; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 5, 2: 864—865, 901, 925, & 926, fig. 764. 1961; R. M. Carleton, Ind. Common Names Herb. Pl. 88. 1962; Hocking, Excerpt. Bot. A.5: 43. 1962; J. F. Morton, Wild Pl. Surviv. S. Fla. 32. 1962; Little & Wadsworth, Common Trees P. R. [U. S. Dept. Agr. Forest Serv. Agric. Handb. 249:] 476 & 480—481, fig. 227. 1964; Harrar in C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 6, 2: 920. 1965; D. R. Harris, Univ. Calif. Publ. Geogr. 18: [Pl. Anim. & Man Outer Leeward Is.] 28, 151, & 152. 1965; Liogier, Rhodora 67: 350. 1965; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 6, 2: 864—865 & 901, fig. 764. 1965; D'Arcy, Rhodora 69: 438. 1967; Hocking, Excerpt. Bot. A.11: 503. 1967; J. Jiménez, Archiv. Bot. & Biogeog. Ital. 43: 14. 1967; W. R. Mattoon, Forest Trees Fla., ed. 9, 91. 1967; Moldenke, Phytologia 14: 507. 1967; Moldenke, Résumé Suppl. 15: 14 & 18 (1967) and 16: 4. 1968; C. F.

Brockman, Field Guide Trees N. Am. 262—263. 1968; Moldenke, Biol. Abstr. 49: 4199. 1968; J. A. Steyerma., Act. Bot. Venez. 3: 72, 85, 86, & 156. 1968; Hardin & Arena, Human Poison. Nat. & Cult. Pl. 129. 1969; Little, Forest Serv. Res. Paper ITF.9: 11. 1969; A. L. Moldenke, Phytologia 18: 115. 1969; El-Gazzar & Wats., New Phytol. 69: 483 & 485. 1970; Gantz, Naturalist South. Fla. 169. 1971; Long & Lakela, Fl. Trop. Fla. 16, 738, & 934. 1971; Moldenke, Fifth Summ. 1: 28, 93—95, 100, 102, 104, 106—109, 111, 112, 122, 129, 131, 133, 356, 357, 391, 426—429, 431—438, & 474 (1971) and 2: 731, 766, 774, & 859. 1971; Rogerson, Mycologia 63: 1280. 1971; Woodbury, Martorell, & Garcia Tuduri, Journ. Agric. Univ. P. R. 55: 501—502. 1971; C. D. Adams, Flow. Pl. Jamaica. 633, 797, & 808. 1972; Moldenke, Phytologia 23: 428. 1972; A. L. Moldenke, Phytologia 23: 318. 1972; Tomlinson & Fawcett, Journ. Arnold Arb. 53: 386—389, fig. 1—11. 1972; Anon., Biol. Abstr. 55 (12): B. A. S. I. C. S.50 & S.268 (1973) and 56 (8): B.A.S.I.C. S.53. 1973; K. E. Clausen, Biol. Abstr. 55: 6566 (1973) and 56: 4183. 1973; Moldenke, Phytologia 25: 227 & 236 (1973) and 27: 264. 1973; Tomlinson, Journ. Arnold Arb. 54: 120. 1973; Wedge, Pl. Names, ed. 1, 7 (1973) and ed. 2, 10. 1974; Howes, Dict. Useful Pl. 96. 1974; León & Alain, Fl. Cuba, imp. 2, 2: 299 & 300, fig. 129. 1974; Little, Woodbury, & Wadsworth, Trees P. R. & Virg. Isls. 2 [U. S. Dept. Agr. Forest Serv. Agric. Handb. 449]: 990 & 1000. 1974; Moldenke, Phytologia 28: 434 & 448. 1974; López-Palacios, Revist. Fac. Farm. Univ. Los Andes 15: 10—15, 19—21, & 49, [fig. 1]. 1975.

Additional & emended illustrations: C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 1, fig. 764 (1922), ed. 2, imp. 2, fig. 764 (1926), and ed. 2, imp. 3, fig. 764. 1933; Navarro Haydon, Arb. Ornament. Puerto Rico 11. 1936; West & Arnold, Nat. Trees Fla. 191. 1946; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 4, fig. 764 (1949) and ed. 2, imp. 5, fig. 764. 1961; J. F. Morton, Wild Pl. Surviv. S. Fla. 32. 1962; Little & Wadsworth, Common Trees P. R. [U. S. Dept. Agr. Forest Serv. Agric. Handb. 249:] 481, fig. 227. 1964; C. S. Sarg., Man. Trees N. Am., ed. 2, imp. 6, fig. 764. 1966; C. F. Brockman, Field Guide Trees N. Am. 263. 1968; Tomlinson & Fawcett, Journ. Arnold Arb. 53: 387, fig. 1—11. 1972; León & Alain, Fl. Cuba, imp. 2, 2: 300, fig. 129. 1974.

Recent collectors describe this species as a slender shrub, 1.5–4 m. tall, or a small tree, 4–20 m. tall or more, the trunk 2–20 cm. in diameter at breast height, the branches spreading, "out-curved" or upwardly ascending, the bark gray or blackish-gray, rough, furrowed or finely fissured, slightly shaggy, the leaves "chartaceous", glossy, the flowers fragrant, and the fruit fleshy shiny or glossy, pendulous, green or greenish at first, turning to yellow-green, then orange, then dull-red, reddish-brown, dark brownish-red, dark brownish-maroon, and finally purplish-black or black. The corollas are almost uniformly described as "white" (e.g., Gastony & al. 391, Killip 4449, Liogier 17415, Little 13110, 13111, 13741, 21581, & 21638), but on Little 13176 they are said to have been only "whitish" and on Correll & Popenoe 42558 they were

"cream"-colored. Morton (1962) avers that the ripe fruit is "edible, but not desirable". Little 13389 exhibits very much narrower leaf-blades than usual and therefore is herein regarded as var. smallii Moldenke. The collector of D. S. Correll 41743 says that its leaves are "not typical".

Collectors have found C. fruticosum growing in red clay soil, in dry or montane forests, dry limestone woodlands, dune coppices, the edges of coppices, lowland or evergreen seasonal forests, a-long cutover roadsides, in roadside thickets, and in secondary thickets of mostly shrubs and small trees to 15 feet tall, at altitudes from sealevel to 1200 meters, flowering from June to September, and fruiting in March and from June to December. Woodbury and his associates (1971) report it as "Abundant in the interior valley, on mountain slopes along the coast, as well as on upper barren ridges" of Desecheo Island. Little (1969) reports finding it on Jost van Dyke Island. Wilbur and his associates describe it as an "occasional tree" on Dominica. D'Arcy (1967) reports that on Tortola it is "common in thickets and on hillsides at lower elevations". Liogier found it "common in thickets" or "fairly common at sealevel" in the Dominican Republic. On St. Croix Fosberg reports it as "occasional on summit in dry brushy vegetation on steep slopes" or "occasional in thickets at sea cliff edges". Adams (1972) tells us that in Jamaica it is "Common in thickets and woodland on limestone, especially near the sea, also on the cays", from sealevel to 2500 feet elevation, flowering from June to November and fruiting there from July to March. He cites Adams 6026 & 11868, Harris 8608, Jamaican Plants 1076, and Proctor 10384, giving its overall distribution as "Florida, Venezuela, Suriname, West Indies".

Peckolt (1904) records what he calls "Citharexylon cinereum L." from Amazônas and Pará, Brazil, but this is doubtless a case of misapplication of the binomial to some other species, possibly C. poeppigii Walp.

Woodbury and his associates (1971) cite D.4 & D.77 from Desecheo Island. Additional vernacular names recorded for C. fruticosum include "bastard mahogany", "bois-guitare coriace", "bois-guitare cendré", "old-woman's-bitter", "pénsula", "white fiddle wood", and "yellow fiddlewood".

The species serves as host to the fungus, Epithele vermicifera (Bourd.) Boquiren, and, in the Dominican Republic, Asteridiella vilis var. citharexylis Hansf., the latter based on Ciferri 241.

If the "Citharexylon ? foliis venosis ovatis alternis, cortice scabro longitudinaliter fisco" of Sloane really belongs here is questionable because of his "foliis....alternis" statement. He refers to it as the "green-heart fiddle-wood" and says of it "This tree is frequent in the woods about the Ferry [in Jamaica], where it grows to a very considerable size; and is generally looked upon as one of the best timber-trees in the island. I have not seen any of its fruit, or flowers; therefore could not class it with any certainty: but have placed it here, from its outward

appearance, and the grain and texture of its wood."

Tomlinson & Fawcett (1973) point out that this species is commonly described as having perfect flowers, but in southern Florida, at least, it is dioecious. The flowers, however, of the two sexes are very similar in outward appearance and are not at all readily distinguishable by casual observation.

Sloane (1755) tells us that in Jamaica "This plant is very common in all the Savannas.....it is but a small shrub, and seldom rises above eight or nine feet in height. The veins of the leaves, and all the tender buds, are of a brown colour; and the bark of the trunk and lower branches, of a whitish-ash-colour".

West & Arnold (1946) assert that "Occasional Florida fiddlewoods are found in Brevard and Manatee counties [of Florida], which represent the northern extension of the range of this subtropical species. In spite of the attractive glossy foliage, its growth-habit is too irregular to recommend it as an ornamental. The very hard, heavy, fine-grained wood is desirable for cabinet-making, including musical instruments. From the latter use arose the common name 'fiddlewood'."

López-Palacios (1975) speaks of this species in Sucre, Venezuela, as attaining a height of more than 25 meters and a trunk diameter of 40 cm. and that it ascends there from sealevel to 900 meters altitude. The excellent illustration which he gives ("fig. 2") is, however, certainly not a depiction of C. fruticosum — it is, rather, an absolutely perfect illustration of typical C. spinosum L. I am, therefore, very dubious about his Venezuelan records for C. fruticosum and suspect that they apply, instead, to C. spinosum.

Material of C. fruticosum has been misidentified and distributed in some herbaria as C. caudatum. On the other hand, the G. R. Proctor 8666 and Taylor & Taylor 11297, distributed as C. fruticosum in its typical form, are actually C. caudatum L., while Correll & Correll 42002, E. L. Little 16367, 23756, 23816, & 26098, and Shafer 1150 are C. fruticosum f. bahamense (Millsp.) Moldenke; Beard 315 and E. L. Little 13389 & 21581 are C. fruticosum var. smallii Moldenke; Fosberg 42666, Killip 31698, 40702, & 41149, E. L. Little 16390, 21944, & 26082, and P. B. Tomlinson s.n. [19-XII-67C] are C. fruticosum var. subvillosum Moldenke; Little 26099 and Stimson 4166 are C. fruticosum var. villosum (Jacq.) O. E. Schulz; Hespenheide, Hespenheide, Calver, & Ricklefs 1391 is x.C. jamaicense Moldenke; F. Miranda 6318 is C. lucidum Schlecht. & Cham.; Little 26048 (in part), G. R. Proctor 18123, Ruiz-Terán & López-Palacios 9891 & 10231, M. Shah MS.1230, and Wilbur, Dunn, Hespenheide, & Wiseman 7379, 8236, & 8263 are C. spinosum L.; and Little 26048a is not verbenaceous.

Additional citations: FLORIDA: Brevard Co.: Curtiss 1969 (Ms—7161, Ms—30926). Dade Co.: D. H. Caldwell 8727 (An—231369, N); P. B. Tomlinson s.n. [18-XII-67D] (Ft—2186, Ft). County undeter-

mined: A. P. Garber s.n. [1877] (Ms--30925). Big Pine Key: Killip 41149 (Mi). Jupiter Island: Christensen & Christensen RC.42d (W--2604011). BAHAMA ISLANDS: Elbow: Correll & Popenow 42558 (N). Great Inagua: D. S. Correll 41743 (N).

[to be continued]

NOTES ON NEW AND NOTEWORTHY PLANTS. LXXIX

Harold N. Moldenke

ERIOCAULON TENUIFOLIUM f. *VIVIPARUM* Moldenke, f. nov.

Haec forma a forma typica speciei capitulis maturis plerumque viviparis recedit.

This form differs from the typical form of the species in having its mature fruiting heads mostly viviparous.

The type of the form was collected by J. Murça Pires, P. Cavalcante, H. Magnago, and N. T. Silva (no. 13980) "na areia do barrano, Quadecula SA-20-X-A, Ponto Olá, P. Xeriuini, campina seca, alagável nas cheias" and also bears a label reading "João Murça Pires et al. no. 13.975 até 13.995", Amazonas, Brazil, and is deposited in the United States National Herbarium in Washington.

LANTANA BAHAMENSIS f. *ALBIFLORA* Moldenke, f. nov.

Haec forma a forma typica speciei corollis albis recedit.

This form differs from the typical form of the species in having white corollas.

The type of the variety was collected by Alma Lance Moldenke and Harold Norman Moldenke (no. 29885) on sand dunes on Jekyll Island, Glynn County, Georgia, on May 20, 1975, and is deposited in my personal herbarium at Plainfield, New Jersey.

Recent field and herbarium studies show that there exist in the wild state in Florida more taxa of *Lantana* than has previously been supposed, including the typical orange-flowered *L. bahamensis* Britton with its characteristically narrow leaves, *L. tiliaefolia* Cham. (with bristly-hairy stems), *L. horrida* H.B.K. (with coarsely toothed leaves), *L. camara* L. (with glabrate or minutely puberulent stems) and its vars. *aculeata* (L.) Moldenke (with very prickly stems), var. *mista* (L.) L. H. Bailey (with youngest twigs hirsute), var. *mutabilis* (Hook.) L. H. Bailey (with corollas changing from white to yellow to rose-violet), *L. ovatifolia* Britton (small ovate leaves), *L. depressa* Small (prostrate, yellow-flowered), and the large-bracted *L. montevidensis* (Spreng.) Briq., *L. involucrata* L. and its var. *odorata* (L.) Moldenke and f. *rubella* Moldenke, and *L. microcephala* A. Rich.